

39. SIXTH SEMESTER SYLLABUS

Sem	Subject Group	Course Code	Subject	Hours/week			Credits	Marks			
				T	S	W/L		CA	University Exam		Total
									Jury	Written	
VI	I (a)	19AR06001	Architectural Design 6		10		10	250	250		500
Course Overview:											
<p>Course familiarize the students with campus planning principles</p> <ul style="list-style-type: none"> • Design of built environment of complex nature in a campus incorporating campus planning, urban design and sustainable design principles with detailed site analysis and sitesuitability. • Development of zoning and site planning incorporating function, climatic response, structural system, materials, universal design, services,etc. • To understand planning principles suitable for the topography and appropriate landscaping strategies to learn design detailing of an Assembly buildings with emphasis on angle of vision, raking design, acousticsetc. • To create an awareness of Building rules/National Building Code of India / Universal design standards /other regulations such as cinemas regulation act, CRZetc. • Sustainable design objectives: To equip students with sustainable campus design principles considering climate, building envelope, site preservation, HVAC, green materials, renewable energy, natural lighting, fresh air ventilation, efficient landscape etc. To equip the students to adopt sustainable building techniques in campus design such as usage of renewable energy, Rain water harvesting, passive cooling techniques, use of low embodied energy materials, water and waste management etc. To familiarize the students with the concepts of Indian Green building standards such as IGBC, GRIHA, ECOHOUSING and other relevant rating systems. 											
Course Outcomes:											
<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> • Have an understanding of campus planning principles, importance of site planning and built form/open space relationship • Understand the relationship between built and un-built and the aesthetics of 3dimensional composition of builtform • Understand the sustainable approaches in campus planning through efficient utilization of energy, water andmaterials 											
Major Project											
<p>Design of an urban or rural campus by developing a master layout plan and designing of various built and un-built spaces that constitute the campus. Architectural design and detailing of at least two major built components (Built up area up to 4000 SQM) and open space design and detail.</p> <p>Emphasis may be given on:</p> <ul style="list-style-type: none"> • Campus planningprinciples • Hierarchy of built and un-builtspace • Detailing of pathways and roadnetwork • Suitable response to sitetopography 											

- Appropriate Structural System in the builtforms
- Climatic responsive planning approach
- Alternative energysystems
- Water conservation techniques and waste management strategies

Time bound project

Design and detailing of an Assembly building incorporating applicable regulations and standards. with reference to applicable norms and standards.

Minor project (Maximum up to 2 weeks)

Design and detailing of urban design elements incorporating principles of campus planning. (Design of gateway structures, landmark spaces or built forms, open spaces, Pathways, Road network and suitable sections incorporating service layout). Application of sustainable urban design principles (water management, energy efficiency, sustainable materials etc.) demonstrated in the campus layout

Reference:

- Urban design: a typology of procedures and products. Lang, Jon T
- Richard P. Dober, "Campus Planning" - Society for College and University Planning, 1996.
- Campus Design in India by Achyut Kanvinde
- Kevin Lynch, "Site planning", MIT Press, Cambridge, 1967
- National Building Code/ Kerala Building Rules
- Joseph De Chiara, Michael J Crosbie, "Time Saver Standards for Building Types", McGraw-Hill Professional, 2001.
- Ernst Neuferts, "Architects Data," Blackwell, 2002.
- Joseph De Chiara, Julius Panero, Martin Zelnik, "Time Saver Standards for Interior Design and Space Planning", McGraw Hill, 2001.

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									Jury	Written	
VI	I (c)	19AR06002	Working Drawings 1		4		4	100	100		200

Course Overview:

The subject primarily aims to introduce the concept of Working Drawings and Details; Coordination between Architectural, Structural, Services and other disciplines; Preparation of Architectural Working Drawings for a design project.

Course Outcomes:

Upon completion of the course, the student should:

- Be able to familiarize the students to learn the techniques of preparing drawings which are used for construction of buildings and working details of project execution onsite.
- Understand the organization of various building services inside the layout of a building
- Be familiarized with the networking and coordination skills among various disciplines to put together a working drawing
- Be taught in congruence with the previous year design projects.

Module 1: Introduction to Working Drawings									
Learning Strategies:									
<ul style="list-style-type: none"> • Lecture on various working drawing practices • Workshops to learn specifications and standards 									
Module Contents:									
<ul style="list-style-type: none"> • Overview of Working Drawings; It's importance; historical perspective; consultants involved in preparation of working drawings, their role and scope; reading, error checking, sequencing of drawings for construction, problems in working drawings. • Drafting Conventions: Representation of materials, graphic symbols, line type conventions, grid lines, dimensioning, lettering, color codes, paper sizes, title blocks, office practices, standardization of details. 									
Module 2: CAD Drawings/BIM									
Learning Strategies:									
<ul style="list-style-type: none"> • CAD Workshops to familiarize drafting methods with emphasis on multidisciplinary working environment. 									
Module Contents:									
<ul style="list-style-type: none"> • CAD Drawings/ BIM: Working within a disciplined and systematic software environment using layers, blocks, templates, assemblies, libraries, layouts, plot styles, error checking, editing, xref, annotation etc. 									
Module 3: Project work									
Learning Strategies:									
<ul style="list-style-type: none"> • Drafting Studios to design a working drawing • Manual drafting may be encouraged for thorough understanding of details • Workshops to design custom drafting styles, blocks, and assimilation for drafting library 									
Module Contents:									
<ul style="list-style-type: none"> • Project work: Preparation of Architectural Working drawings and details for a Design project from previous semesters- G+1 structure (Residence, Primary Health Center or School etc.). Preparation of Site Layout, Setting out and centre line drawings, Plans at all levels, Roof/Terrace Plan; all Elevations; two Cross Sections (minimum) passing through staircase & lift shaft; Profile Sections; Details to include: Toilet, Kitchen, Staircase, Door, Window, Grills/ Jali works, Handrails, Compound walls, Gates, Sky-light. 									
Reference:									
<ul style="list-style-type: none"> • Architectural Graphics by Francis D. K. Ching • Building construction illustrated by Francis D. K. Ching • Building construction metric Vol 1-5 by W. B. McKay • Detail in Contemporary Residential Architecture by Virginia McLeod 									

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VI	I (c)	19AR06003	Professional Skill Enhancement 6		4	2	50	50		100
Course Overview:										
<p>This course intends to provide/ enhance the soft skills in order that students perform well in their academics and beyond. These skills are intended to support the student to perform better in her/his core subjects and also build up robust performance through hands-on workshops and laboratory training. This course is subdivided into two categories – Mandatory and Optional. Mandatory courses help in preparations for respective semester subjects. The optional category helps students to take personal initiatives to develop in specific areas that can widen their horizon of their understanding of architecture and also initiate action at the society level. There are also options to work on competitive exercises alongside other similar institutions.</p>										
Course Outcomes:										
<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> • be given an exposure of varied skills that can bring in confidence in handling their core subjects such as workshops, communication skills, computer application etc. • be able to develop team spirit and interpersonal skills to manage complex situations. • be able to cope with stress and develop multi-tasking capabilities. 										
Module 1: Portfolio workshop										
Learning Strategies:										
<ul style="list-style-type: none"> • Workshop • Presentations and discussions 										
Module Contents:										
<ul style="list-style-type: none"> • Portfolio content and design • Compiling and presenting techniques • Personalizing 										
Module 2: Innovations										
Learning Strategies:										
<ul style="list-style-type: none"> • Computer lab, workshop • Group discussions and Interactive sessions 										
Module Contents:										
<ul style="list-style-type: none"> • Learn how to utilise sustainable materials. • Work on a live project with a focus on social engagement and innovative green agenda. • Collaborate with a local collective of artists or craftsmen. • Get hands-on experience using cutting edge facilities in custom built studios and workshops 										
Module 3: Social Initiatives or any other co-curricular activities										

Learning Strategies:

- Technical and hands on workshops
- Group discussions and Interactive sessions
- Self-initiatives

Module Contents:

- Optional content to be developed by each institution in order to help students to take part in activities that involve larger groups and facilitate peer learning.
- The activities could be skill oriented like Photography or Crafts training or student initiated societal activities or participation in NASA or similar student led group initiatives which has an academic content as well.

Reference:

- Uday Kumar Haldar, (2010), *Leadership and Team Building*, 1st edition, Oxford University Press
- John J. Murphy, (2017), *How to Unleash the Power of Your Subconscious Mind: A 52-week Guide*, 1st edition, HarperCollins
- Ace McCloud, (2017), *Team Building: Discover How to Easily Build & Manage Winning Teams (Strategies for Building and Leading Powerful Teams)*, Pro Mastery Publishing
- Alvarado & Anthony, (2015), *DIY Magic*. Perigee
- Damon Jones, (2019), *Shipping Container Homes: The best guide to building a shipping container home and tiny house living, including plans, tips, FAQs, and more!* 1st edition, Ingram Publishing

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VI	II	19AR06004	Housing	2			2	50		100	150

Course Overview:

To introduce the students into the field of housing-to make them understand its significance in the context of both global and national scenario, and thereby to make them sensitive to the critical social and economic issues related to housing especially in developing countries like India and Kerala in particular, with emphasis on the analytical study of relevant housing initiatives. To introduce them to the diverse factors in designing a composite housing layout.

Course Outcomes:

Upon completion of the course, the student should:

- Understand the importance of housing and its relation with poverty.
- Recognize housing issues at national and international context in terms of magnitude of problems, outcomes of initiatives and related factors.
- Understand the issues related to slums and affordable housing to poor and innovative approaches towards mitigating it.
- Be equipped to have a comprehensive understanding of the complexities of a housing project.

Module 1: Introduction to Housing

Learning Strategies:

- Lecture notes, literature-based case examples through books, journal-resource

<p>Module Contents:</p> <ul style="list-style-type: none"> • Concept of housing-Shelter as a basic requirement, Determinants of housing • Housing shortage, housing need and demand. Affordability – House hold size, household income. • Housing and its impact on national economy. Economics of Housing as an industry. • Global Housing scenario, Challenges. • United Nations Policies relevant to Housing and Planning - Habitat Agenda, Millennium Development Goals. International case studies. • Urbanization and Poverty issues -Housing Shortage as a result of Population Explosion. • Study of Slums as a consequence of rapid urbanization and industrialization, and its impact on the urban housing scenario in India and abroad.
<p>Module 2: Housing Scenario in India</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lecture notes, through books, journal e-resource, case studies, data analysis.
<p>Module Contents:</p> <ul style="list-style-type: none"> • Nature and magnitude of the housing problem in India. History of Housing and Planning Policies in India, Five Year Plans. • Study on the changing priorities in the housing policies and the major housing programs carried out in the various five-year plans in India. • National Housing and Habitat Policy and its need, objectives and role in the field of housing in the present-day context. • Housing design and standards conforming to the local climatic and socio-economic
<p>conditions.</p> <ul style="list-style-type: none"> • Literature case studies of some of the major Slum clearance and Slum Improvement Schemes successfully carried out in India. • Important earlier & prevailing Housing Schemes in India for various categories like HIG, MIG, LIG, EWS etc. • Innovative approaches to social housing. International, National & state level Case studies.
<p>Module 3: Housing Finance</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lecture notes, through books, e-resource, case studies, analysis of prevailing housing concepts & schemes.
<p>Module Contents:</p> <ul style="list-style-type: none"> • Factor affecting demand and supply of housing. Housing Finance & Land economics. • Housing Finance, Sources of Housing Finance and its essential characteristics. • Different Finance agencies involved in Housing - Formal & Informal housing finance agencies, National and State level • Role of the informal housing finance system as a major source of housing finance for the urban and rural poor • Illustrative case studies of relevant and innovative housing schemes or projects in India and Kerala in particular.

Workshop/Group Assignment.

- Design for a composite Housing Layout of around 2acres.
- Deliverable: Basic sketches & Block

model Intension of the exercise:

1. Introduction to Planning & Design principles.
2. Understanding categories, Densities, Land use, Circulation, Infrastructure, Openspaces
3. Interpreting FAR, Coverage and other regulatory principles.

Reference:

- K. Thomas Poulose- 'Innovative Approaches to Housing for the poor'
- Dr. Misra and Dr.B.S. Bhooshan-'HabitatAsia'
- Dr. Misra and Dr.B.S. Bhooshan- 'HabitatIndia'
- Arthur Gallion- 'UrbanPattern'
- Reading Material in Housing -Compiled by K. Thomas Poulose for ITP students
- Five Year Plans-Government of India Publications
- Shadow cities by Robert Neuwirth
- The economics of urban property market by Paschalis A.Arvanitidis
- The modern economics of Housing by Randall Johnston
- Urbanization and urban systems in India by R.Ramchandran
- Urbanization in India Ed. by R.S.Sandhu
- Planning sustainable cities-UN Habitat

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VI	II	19AR06005	Specification and Cost Estimation	2			2	50		100	150

Course Overview:

Specification is an integral part in the design process through which the quality of our built environment could be upheld. The course shall cover the aspects of specification, the related aspects of cost estimation and the strategies of realizing them. The students will be introduced and familiarized with the various techniques and processes of preparing an estimate, tender documents and the process of tendering. The exercises taken shall be based on the design exercise done by them in the previous semester. Another important role an Architect plays is of a Valuer for immovable properties. The students will be introduced and made aware of the various methods and techniques for doing the valuation of a property. The subject will be taught in congruence with the Design studio, and assignments for the subject will be linked to the design exercises to achieve higher level of learning and understanding the practical application of the same.

Course Outcomes:

Upon completion of the course, the student should:

- Be able to technically specify aspects of the built environment and validate them as per quality standards approved nationally or internationally.
- Be able to understand estimates and prepare them for small scale projects.
- Be able to understand valuation and the related aspects to critically use them in the design process.

Module 1: Quantity surveying

Learning Strategies:

- Lectures
- Case studies of projects and their contract documents

Module Contents:

- Introduction to the basic terms used in Estimation
- Important considerations while preparing an Estimate
- Introduction to various types of Estimates
- Various Techniques of Preparing the Estimates and BOQ's

Module 2: Specifications

Learning Strategies:

- Lectures
- Visiting a QS office to understand the process and procedures

Module Contents:

- Introduction to specifications
- Important considerations while writing the specifications
- Specifications as per CPWD, PWD etc., and how to read them
- Writing specifications for building works
- Writing specifications for Interior finishing and furnishing Works

Module 3: Analysis of Rates

Learning Strategies:

- Lecture notes
- Through books & E-resource
- Case studies
- Analysis and prevailing concept in real estate housing design.

Module Contents:

- Introduction to Schedule of Rates
- Importance of Rate Analysis
- Considerations done while doing the Rate Analysis
- Calculations for basic building materials like RCC, Brick work Calculating the various quantities of materials required per unit
- Introduction to Valuation
- Process of valuation

Reference:

- Estimating, costing and valuation: professional practice and quantity surveying by Rangwala
- Estimating and costing in civil engineering: theory and practice by B.N. Dutta
- Estimating costing and building economics for architects by Prof. Harbhajan Singh
- Estimating, costing, specification and valuation in civil engineering: principles and applications by Manojit Chakraborti
- Quantity Surveying and Valuation (Estimation, Costing and Contracting) by S.P Mahajan and Sanjay Mahajan
- CPWD Specifications by Central Public Works Department
- Delhi Schedule of Rates by CPWD
- Valuation of real properties by Rangawala

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
VI	II	19AR06006	Building Services 3: Mechanical Services & Acoustics	2			2	50		100	150

Course Overview:

- Services are the lifeline systems of any built form making it functionally habitable. They also make them efficient, comfortable and safe. Building services essentially include fluid systems, electrical & energy systems, lighting systems, HVAC systems, security systems etc.
- This course as last of the 3 courses in Building services is intended to give the students an overview of the HVAC systems and Acoustic systems employed in our built environment.

Course Outcomes:

Upon completion of the course, the student should:

- Develop an understanding about the importance of services in buildings and its coordination in the built environment.
- Be able to critically understand various HVAC systems and the determinants in choosing between such systems.
- Develop an understanding on the acoustic design with respect to spaces and materials and be able to propose acoustic solutions.

Module 1: Fundamentals of Heating, Ventilation and Air Conditioning

<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lectures on the fundamentals of thermodynamics and HVAC • National and International professional handbooks on HVAC.
<p>Module Contents:</p> <ul style="list-style-type: none"> • Introduction to HVAC - basic concepts, standards - national and international • Terminologies related to humidity and temperature – Dry bulb and wet bulb temperature, Dew point temperature, Absolute humidity, Relative humidity, Specific humidity, sensible heat gain, Evaporative cooling and condensation. Application of psychrometric chart. • Heat load and types, External Factors contributing to heat load in an enclosed space, internal parameters contributing to heat load. • Methods of reduction of internal / enclosed heat load - Natural (Active and passive cooling) and artificial ventilation. • Thermal conductivity. Building materials with low thermal conductivity. • An outline on HVAC related energy efficient rating systems.
<p>Module 2: Types of HVAC Systems</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lectures on HVAC system types and their application criteria. • Case studies on various HVAC systems • Guest lectures by specialists.
<p>Module Contents:</p> <ul style="list-style-type: none"> • Artificial ventilation - Refrigeration Cycle and types (Vapour Compression System & Vapour Absorption system). Basic components of an Air conditioning System- Evaporator, Compressor, Condenser. • Types of AC - Window Air Conditioners, Split Air Conditioners, Packaged Air Conditioners, Direct Expansion Air Conditioning Systems, Central or All-water Air Conditioning Systems. • Components - Plant Room, AHU room, FCU, VRV, VRF, terminal unit. • Basic Air Duct Design & Principles, Duct system, Air Duct Routing Concept of return air – <p>Thermal and acoustical treatment of ducts.</p> <ul style="list-style-type: none"> • Inlets and outlets (Grills, registers and diffusers), dampers and filters in duct system and their location. • Standard Refrigerants & Properties, CFC free refrigerants.
<p>Module 3: Introduction to Basics of Acoustics</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Introduction to acoustics • Lab experiments to understand acoustical properties • Market studies on Acoustical materials

Module Contents:

- Basic laws and terminologies related to Acoustics.
- Sound Intensity, Sound Intensity Level, and sound level meter. (Classroom exercise)
- Behavior of sound in rooms- Sound Absorption, Transmission, Reflection, Diffusion and Diffraction, Room shapes, room resonance.
- Free field conditions and Inverse Square Law for noise reduction with distance.
- Acoustic Materials – characteristics and applications

Module 4: Acoustics in Buildings

Learning Strategies:

- Case studies on acoustically treated spaces.
- Understanding behavior of sound in various enclosed spaces.
- Understanding impact of sound in built environment.
- Acoustical design project of an existing space.

Module Contents:

- Requirement for good acoustics – Reverberation Time and its importance for acoustical performance of an enclosure, Sabine’s Equation and Eyring’s formula
- Acoustical defects and design of auditorium and other acoustically sensitive enclosures meant for speech, music, lecture, etc. (Class rooms, room for music, recording studios, open air theatre, multi-purpose rooms)
- Brief introduction to Sound Amplification Systems.
- Noise- types, its transmission and its effects.
- Sound Insulation, Transmission Loss, control of mechanical noise and vibrations.

Reference:

- National Building Code 2005
- Mechanical and Electrical Equipment for Buildings by Walter T. Grondzik, Alison G. Kwok, Benjamin Stein.
- Basic Refrigeration and Air Conditioning by A. Ananthanarayana.
- Building Construction by Rangwala.
- Architectural Acoustics by M. David Egan.
- Room Acoustics, Heinrich Kuttruff
- Architectural Acoustics, Bruel & Kjaer
- Principles and Applications of Room Acoustics - Volume 1 and 2, Lothar Cremer (Author), Helmut A. Muller (Author), Theodore J. Schultz (Translator)

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
VI	I (c)	19AR06007(A)	Elective Workshop 2: Cost Effective Technology in Building Construction	1		2	2	50	50	100	

Course Overview:
<ul style="list-style-type: none"> To familiarize and understand the materials and techniques in cost effective construction.
Course Outcomes:
<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> Be able to incorporate cost effective techniques in design. Be able to develop and understanding about the concepts of ecosystem carrying capacity, carbon footprint, sustainability and sustainable development. Be able to aware about the consequences of the emerging vulnerabilities of global warming and climate change and to understand the contribution of building industry to the same.
Module 1: Introduction to Cost Effective Techniques
Learning Strategies:
<ul style="list-style-type: none"> The course would be conducted through research and seminars.
Module Contents:
<ul style="list-style-type: none"> Cost effective techniques: Need, Planning aspects, construction aspects, maintenance and longevity Aspects.
Module 2: Methodology
Learning Strategies:
<ul style="list-style-type: none"> The course would be conducted through live case studies, field works and workshops.
Module Contents:
<ul style="list-style-type: none"> Choice of materials in India/Kerala conditions, indigenous building materials, organic and inorganic building materials, alternative building materials, use of industrial and agricultural wastes - Survey of such materials development by research organizations like CBRI, SERC, IITs etc. Significance of cost-effective construction technology: Relevance of improving of traditional technology, relevance of innovative technology/alternate technology, survey of such technologies by various research institutes.
Module 3: Critical Analysis
Learning Strategies:
<ul style="list-style-type: none"> The course would be conducted through worksheets and critical writing.
Module Contents:
<ul style="list-style-type: none"> Critical analysis (in terms of initial investment, maintenance cost and longevity of buildings) of the local adaptation of the innovative technologies by various agencies.
Reference:

- A.G. Madhav Rao, D.S. Ramachandra Murthy – Appropriate technologies for Low Cost Housing– Oxford & IBH Publishing, 1996.
- G.C. Mathur – Low cost Housing in Developing Countries.
- Proceedings of International Seminar on Low cost Housing and Alternative Building Materials (1988), CBRI Roorkee.
- Jagdish and Singh – Better Houses with Mud
- CBRI – Live Better with Mud and Thatch, SERC AND NBO, Baker Laurie (1988) – Mud, Publications of COSTFORD.

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									Jury	Written	
VI	I (c)	19AR06007(B)	Elective Workshop 2: Geographic Information System	1		2	2	50	50	100	

Course Overview:

The course is intended to provide students with a foundation for basic GIS techniques which are relevant to architectural analysis and Presentation. The elective is intended to establish a bridge between the conceptual realms - Architecture /Site -Terrain Analysis/ Landscape architecture/Urban planning.

Course Outcomes:

Upon completion of the course, the student should:

- Be introduced to the basic concepts of Geographic Information System(GIS)
- Get introduced to geospatial data acquisition and its process.
- Will be equipped to produce digital and printed maps.

Module 1: Introduction to GIS

Learning Strategies:

- Lectures, workshops and labs

Module Contents:

- Introduction to Geospatial technology
- Overview of remote sensing, Applications
- Fundamentals of GIS, GIS as a Hardware/software, Components of GIS
- Map projections- methods, Coordinate systems-Geographic and Projected coordinate systems, Data Types- Spatial and attribute data, Raster and vector data representation-Data Input methods- Data capture & methods, Coordinate reference systems
- An overview of Google Earth & KML, Google Objects, Descriptive HTML in Placemarks, Ground overlays, Screen overlays, Paths, manipulating a path Polygon, taking profiles of site, creating KML files and exporting to GIS format.

Module 2: Raster and Vector Data

Learning Strategies:

- Lectures, workshops and labs

Module Contents:

- Overview of Global Positioning System, Application
- Capturing survey data through GPS device or mobile application. Traversing boundary of site, bringing routes and way point data into GIS.
- Spatial data, loading raster files, Mosaic raster, Geo referencing raster and vector files, Loading data from OGC web services, databases.
- Creating vector data layers, joining tabular data, Topology errors & tools, analyzing raster data, combining raster and vector data, Raster surface through interpolation, leveraging the power of Spatial database, Vector and raster analysis, Vector Spatial analysis (Buffers), Spatial analysis (interpolation).

Module 3: Spatial Analysis

Learning Strategies:

- Lectures, workshops and labs

Module Contents:

- Terrain Analysis & scientific computing of Raster data set: Creating Digital elevation model (DEM) from point data, Hill shade, Slope, Aspect
- Creating & Composing maps: Vector styling, Labelling, using appropriate software for composing multiple vector layers of maps, Designing print maps, Publishing GIS 2D maps on the web

Reference:

- Anita Graser, "Learning QGIS" PAKT open source, 2016.
- John Van Hoesen, Luigi Pirelli, Richard Smith Jr., Kurt Menke, " A refreshing look at QGIS: Mastering QGIS", PACKT Pub., 2016.
- Carson, Tom, Baker, Donna L., "Adobe® Acrobat® and PDF for Architecture, Engineering, and Construction", Springer publication, 2006
- Kang-Tsung Chang, "Introduction to GIS", Tata McGraw-Hill Publishing Co. Ltd, 8e, 2016
- <https://sites.duke.edu/envgis/tutorials/introduction-to-google-earth/>
- CBSE Textbooks on Geospatial Technology

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VI	I (c)	19AR06007(C)	Elective Workshop 2: Vernacular Architecture	1		2	2	50	50	100	

Course Overview:

To inculcate an appreciation of vernacular architecture; as an expression of local identity and indigenous traditions of the culture.

Course Outcomes:

<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> • Develop an understanding of vernacular architecture as a process and not a product and explore the concepts of culture and civilization and their impact on these architectural products. • Develop an understanding of vernacular architecture as an outcome of various social, political and economic influences and as a response to the cultural and climate conditions. • Develop an understanding of the physical experience of buildings in order to appreciate the complexity of the physical and metaphysical influences bearing on architecture.
<p>Module 1: Introduction to Vernacular Architecture</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • The course would be conducted through seminars and fieldwork.
<p>Module Contents:</p> <ul style="list-style-type: none"> • Introduction to the approaches and concepts to the study of vernacular architecture, • History and organization of vernacular buildings of different regions in the Indian context; with an understanding of forms, spatial planning, cultural aspects, symbolism, colour, art, materials of construction and construction techniques. • Study of factors that shape the architectural character and render the regional variations of vernacular architecture - geographic, climatic, social, economic, political and religious aspects, local materials and skills available in the region, etc.
<p>Module 2: Methodology</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • The course would be conducted through field work and case studies.
<p>Module Contents:</p> <ul style="list-style-type: none"> • Methods of observation, recording, documenting and representing vernacular architecture with examples. • Study and documentation of vernacular architecture of selected building typologies. • Rigorous documentation, accuracy in measuring, collating the recorded information and drawing them up in specified formats and scales.
<p>Module 3: Critical Review</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • The course would be conducted through method seminar and research.
<p>Module Contents:</p> <ul style="list-style-type: none"> • A critical review of the relevance and application of vernacular ideas in contemporary times. • An appraisal of architects who have creatively innovated and negotiated the boundaries of 'tradition' while dynamically responding to the changing aspirations and lifestyles of the world around.
<p>Reference:</p>

- Carter, T., & Cromley, E. C. Invitation to Vernacular Architecture: A Guide to the Study of Ordinary Buildings and Landscapes. Knoxville: The University of Tennessee Press.2005
- Cooper, I. Traditional buildings of India. Thames and Hudson Ltd, London,1998
- Oliver, P. Encyclopedia of Vernacular Architecture of the World, Cambridge University Press,1997

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
VI	II	19AR06008(A)	Elective Theory3: FacilitiesPlanning	2			2	50		100	150

Course Overview:

- To make students familiar with different building typologies.
- The rules and regulations for the building.
- Exposing students to the basics of planning and design of special service-oriented spaces in relation to types of spaces, services, standards and management systems.

Course Outcomes:

Upon completion of the course, the student should:

- Be able to do literature case studies and live case studies preferable for better understanding on hospital planning and services.
- Be able to perform research and critical analysis for the respective selected case study and implementation of innovative technologies and solutions

Module 1: Healthcare

Learning Strategies:

- Lectures and Seminars

Module Contents:

- Hospital project- planning considerations, composition of design team.
- Site selection criteria- Accessibility, Soil type, availability of public utilities such as fresh water, power, good drainage, sanitation, waste disposal etc. Consideration of detrimental factors like pollution, possibility for future expansion, total feasibility considerations
- Various Design approaches- the Indian healthcare architectural process, the American healthcare architecture process.
- Rules and regulations- American Association of hospital standards.
- Zoning and Circulation
- Emergency services, Outpatient services, IP services, Diagnostic services, surgical facility, ICU, CSSD, Mortuary, Support services.
- NBC, KBR, Fire norms for hospital.

Module 2: Hospitality

Learning Strategies:

- Lectures and Seminars

Module Contents:											
<ul style="list-style-type: none"> • Site selection criteria • Checklist of Facilities for Classification / Re-Classification of operational Hotels (starrating). • Guidelines for classification of heritage hotels. • Guidelines for classification of tented accommodation. • Standards in TSS and Neuferts for hotel, Kitchen design, restaurant and Bars-Front of house, Back of House, Store 											
<ul style="list-style-type: none"> • Laundry, Housekeeping, Electrical, Plumbing HVAC, Lift maintenance, Janitors room, security, surveillance. • NBC/ KBR Regulations for Hotel project 											
Module 3: Theatres, Convention centres, Educational buildings											
Learning Strategies:											
<ul style="list-style-type: none"> • Lectures and Seminars 											
Module Contents:											
<ul style="list-style-type: none"> • The Kerala Cinemas (Regulation) Rules, 1988 - building, health and sanitation, fire precautions, • electrical system, seating, etc. • Guidelines for convention centres, Solid Waste Treatment, Crowd management, Security and surveillance Interior and Exterior • Establishment and maintenance of school by government of Kerala Guidelines. 											
Reference:											
<ul style="list-style-type: none"> • G.D. Gunders, Hospital facilities planning and management. • NBC, KBR, Time saver standards. • Guidelines by ministry of tourism, Government of India. 											
Sem	Subject Group	Course Code	Subject	Hours/week			Credits	Marks			
				T	S	W/L		CA	University Exam		Total
									Jury	Written	
VI	II	19AR06008(B)	Elective Theory 3: Services in High Rise Buildings	2			2	50		100	150
Course Overview:											
<ul style="list-style-type: none"> • The course shall develop on the students basic understanding of services acquired during earlier semesters. • To familiarise students with the particular requirements of High-rise buildings • The course shall have up to date content regarding development in the field of High-rise services. 											
Course Outcomes:											

Upon completion of the course, the student should:

- Upon completion of the course the student should
- Have a basic understanding of high-rise buildings and associated service requirements.
- Develop an awareness of relevant codes and regulations governing services in high rise buildings.
- Have an understanding of spatial implications with regard to the service requirements.

Module 1: Introduction to Services in High rise buildings

Learning Strategies:

- Lectures on the subject content
- Case studies of relevant projects
- Site visits to observe and understand the functioning of services.

Module Contents:

- Introduction to High rise buildings, definition as per various national and international codes and norms.
- Overview of services in High Rise Buildings - plumbing, drainage, sewerage, electric and lighting, HVAC, life safety, vertical circulation, service floors.
- Integration of services – IBMS, requirements, possibilities of integration, handshake systems, 3rd party integration, advantages
- Concepts of Intelligent Architecture- Building Service Automation particular to Highrise

Module 2: Water supply, drainage and fire safety for High rise buildings

Learning Strategies:

- Lectures on the subject content
- Case studies of relevant projects
- Site visits to observe and understand the functioning of services.

Module Contents:

- Water Supply & Drainage -Water Supply and waste water system planning, collection, systems
- Water storage and distribution systems, Pressure zone, Pressure reducing valve, Pumps, Rain water harvesting
- Sanitary drainage systems – stack systems, terminal velocity and terminal length, hydraulic jump, suds pressure zones, sewage treatment, recycling and reuse of water.
- Waste management, collection and disposal systems
- Fire Safety in high rise buildings- Planning and design for fire safety, refuge areas, fire detection and fire alarm systems, fire hydrant systems, smoke management systems.
- Provisions in the National building code, International fire Code pertaining to High rise buildings.

Module 3: Electrical, Lighting, HVAC, Vertical circulation and other services

Learning Strategies:

- Lectures on the subject content
- Case studies of relevant projects
- Site visits to observe and understand the functioning of services.

Module Contents:

- Electrical & Lighting - Natural lighting systems, Energy efficiency in lighting systems, Load and Distribution, Planning for intelligent lighting system.
- Alternative energy sources in high rise buildings
- HVAC - Natural and Mechanical Ventilation Systems – Air-conditioning systems types for high rise, Air distribution systems, Planning and Design, Automation and energy Management.
- Planning of vertical transportation in tall buildings- planning concepts, sky lobby concept, double decker lifts, innovative concepts
- Planning of surveillance system, security management systems
- Façade engineering, façade maintenance systems

Reference:

- 'National Building Code of India' 2005 – Bureau of Indian Standards, 2005.
- International Fire Code, (2018), International Code Council
- Manual on Water Supply and Treatment (1991) third Edition, Central Public Health and Environmental Engineering Organization, Ministry of Urban Development, New Delhi.
- W.G. McGuiness and B. Stein 'Mechanical and Electrical equipment for buildings, John Wiley and sons Inc., N.Y.
- Riley Shuttleworth, (1983) 'Mechanical and electrical systems for construction', McGraw Hill Book Co. U.S.
- A. K. Mittal, (2009), Electrical and Mechanical Services in High Rise Building: Design and Estimation Manual, CBS
- ASHRAE: Handbook – HVAC Systems and Equipment (1992), HVAC Applications (1991) ASHRAE, Inc. Atlanta.
- Energy Conservation building code-2007-Bureau of Energy Efficiency-Govt. of India.
- ISHRAE the Hand Book on Green Practices.

Sem	Subject Group	Course Code	Subject	Hours/week			Credits	Marks			
				T	S	W/L		CA	University Exam		Total
									Jury	Written	
VI	II	19AR06008(C)	Elective Theory 3: Indian Thoughts and Traditions	2			2	50	100	150	

Course Overview:

The subject gives a basic introduction to the philosophies and inherent principles that generated the Art and Architecture of India. It also gives a glimpse of various schools of Indian thought and expression. The presentation of the subject may aim at developing a better appreciation and understanding of not only the Indian thoughts and traditions but also of many contemporary questions and issues that they handle in related disciplines.

Course Outcomes:

<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> • Be made aware of the rich knowledge systems and traditions of India • Be introduced to the underlying concepts in Indian Art and Architecture • Have discussions on Indian Identity and Cultural Continuity are encouraged • Have discussions on Ancient Indian wisdom and contemporary challenges are generated
<p>Module 1: Overview of Indian Thought</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lectures and discussions
<p>Module Contents:</p> <ul style="list-style-type: none"> • Historical origins of Indian thoughts and traditions- Pre-vedic, Vedic – Sources- Shruti and Smriti • Concepts of Indian philosophy- Purusharthas, Varnasrama Dharma, Karma and Rebirth, Time • Astika and Nastika schools- Understanding of Brahman, Atman, Samsara, Moksha- Implications • Thoughts of Aurobindo, Tagore and Gandhi
<p>Module 2: Indian Thought and Ecology</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lectures and discussions
<p>Module Contents:</p> <ul style="list-style-type: none"> • Nature as Sacred, Panchabhutas • Flora and fauna, Sacred Geography- Sacred Groves and Sacred Ponds • <i>Vasudhaiva Kutumbakam</i>, 'Deep ecological' implications
<p>Module 3: Indian Thought and Visual Arts</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lectures and discussions
<p>Module Contents:</p> <ul style="list-style-type: none"> • Introduction to Indian Art, Shadaṅga -The six limbs of Indian art • Symbols and Iconography, Rasa theory of Indian Aesthetics • Sculpture and Painting- Cave Murals, Mughal, Pahari, Rajput, Tanjore, etc. • Folk and tribal art forms- Kalamezhuthu, Madhubani, Warli, Pattachitra, Kalamkari, Gond etc. • Mural traditions of Kerala- Study of style, Form and technique
<p>Module 4: Indian Thought and Architectural Expression</p>
<p>Learning Strategies:</p> <ul style="list-style-type: none"> • Lectures and discussions
<p>Module Contents:</p> <ul style="list-style-type: none"> • Underlying Philosophy of Vastusastra • Sacred Geometry- Mandala, Bindu • Stupa- The underlying philosophy and Architectural Expression • Temple- The underlying philosophy and Architectural Expression
<p>Reference:</p>

- M. Hiriyanna, The Essentials of Indian Philosophy,1995
- Meera Baidur, Nature in Indian Philosophy and Cultural Traditions,2015
- S. Radhakrishnan, A Source Book in Indian Philosophy, Princeton University Press,1957
- S. Radhakrishnan, J. H. Muirhead, Contemporary Indian Philosophy, 1936
(<http://archive.org/details/Contemporary.Indian.Philosophy>)
- Richard Lannoy, The Speaking Tree: A Study of Indian Culture and Society,1971
- Lance E Nelson, Purifying the Earthly Body of God: Religion and Ecology in Hindu India,1998
- Carman Kagal (Ed.), Vistara: The Architecture of India,1986
- Aurobindo, Foundations of Indian culture, 1953(<https://archive.org/details/in.gov.ignca.1542>)
- Kireet Joshi, Philosophy of Indian Art,2011
- C.S. Gupta, Indian Folk and Tribal Painting,2008
- Syamala Gupta, Art Beauty & Creativity Indian and WesternAesthetics,1999
- G. Michell, The Hindu Temple – An Introduction to its Meaning and Forms,1977
- Thirumangalathu Neelakandan Moose, ManushyalayaChandrika
- CBSE textbooks on Traditions and Practices ofIndia
- S. Durai Raja Singam (Ed.), The Wisdom of Ananda Coomaraswamy: Reflections on Indian Art, Life, and Religion,1979
- Yatin Pandya, Concepts of space in Traditional Indian Architecture,2004